

FOUR NEW SPECIES OF *POLYGYRA* (GASTROPODA:
PULMONATA: POLYGYRIDAE) FROM COAHUILA, MÉXICO

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Abstract.—Four new species of the pulmonate land snail genus *Polygyra* are described from the state of Coahuila, México: *P. multiplicata* and *P. burlsoni* from the Serranías del Burro, *P. sterni* from the Sierra San Vicente and *P. dalli* from the Sierra de Guadalupe. Relationships within the group are discussed.

Within the state of Coahuila, México, occur numerous insular mountain ranges, most of which have not been investigated malacologically. Herein, 4 new species of the polygyrid land snail genus *Polygyra* are described from 3 such ranges. Differential diagnoses, etymologies, habitats and localities of collections for all species are described collectively in appropriate sections after the descriptions. The following abbreviations for repositories of materials are employed: DMNH = Dallas Museum of Natural History; UA = University of Arizona; USNM = National Museum of Natural History; UTEP = University of Texas at El Paso. We are grateful to Sr. Raul Diego of Piedras Negras, Coahuila, for granting us permission to enter the Rancho el Bonito. We thank Dr. C. J. Durden, Mr. Ernest Marsh and Mr. William Murray for help in making collections.

Descriptions of New Species

Polygyra dalli, new species

Plate I, Figs. D, E

Descriptions of shell of holotype.—Shell small for genus, 8.1 mm in diameter and 4.0 mm high, rounded peripherally, depressed, with spire only a slight bulge upward; umbilicus 1.3 mm wide, contained 6.23 times in shell diameter; aperture obliquely oriented, restricted by denticles; upper lip descending greatly, for ca. 80% of height of body whorl, terminating 2.5 mm from lower lip terminus; outer margin of lip flared, slightly twisted, upper part downward directed; upper lip continuous with upper end of parietal tooth, a complex denticle that extends from lip ventroposteriorly as an erect wall for 1.0 mm where it gives rise anteriorly to a sharply downward-declining spur and, posteriorly, to a very narrowly U-shaped denticle terminating immediately above terminus of lower lip; U-shaped denticle bearing microdenticles, these most numerous on lower, thicker-walled arm of "U" and assuming the form of minute serrations on edge of thinner-walled upper arm of "U"; parietal callus moderately thick, trans-

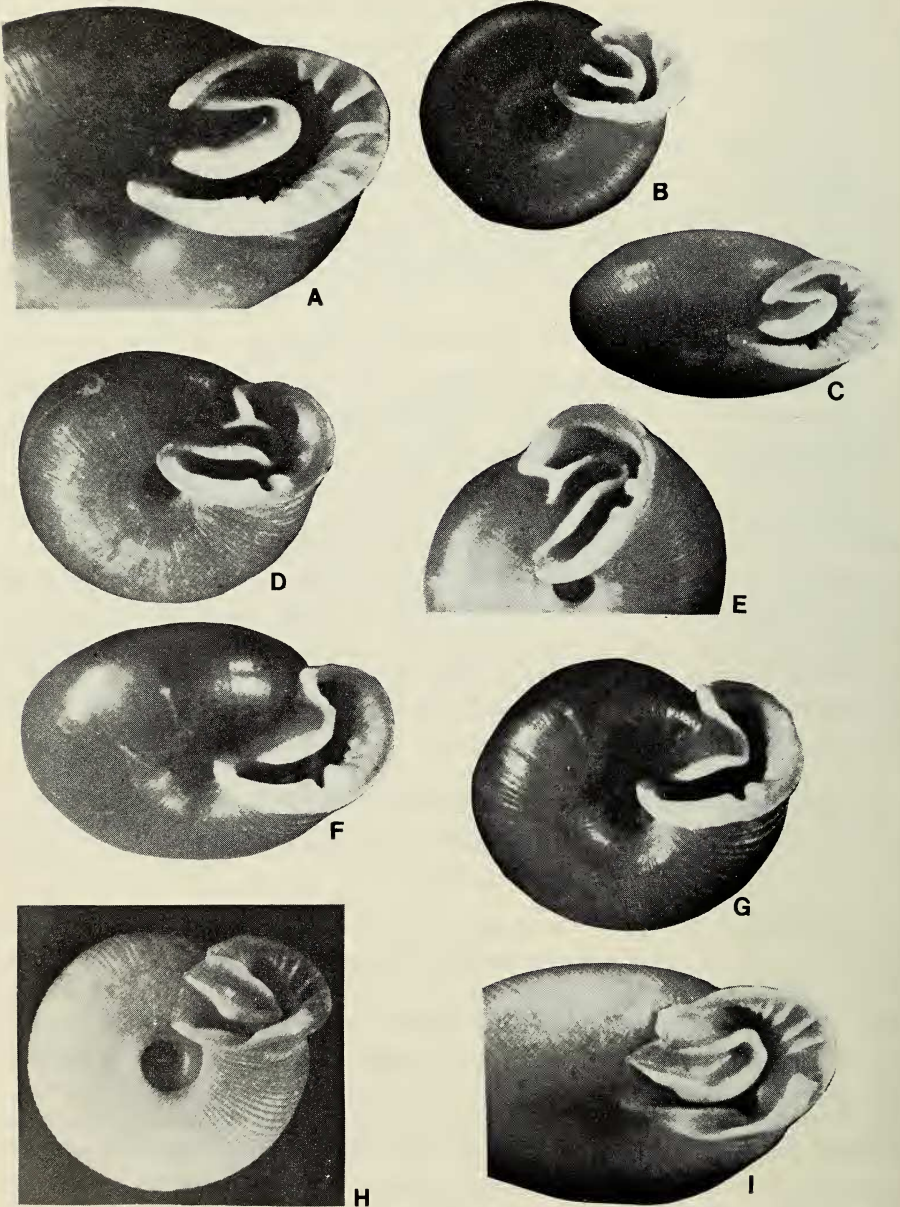


Plate I. Shells of holotypes of new species of *Polygyra* from Coahuila, México. National Museum of Natural History catalog numbers and diameters of shells are indicated. A-C, *P. multiplicata*, USNM 758818 (12.8 mm); D, E, *P. dalli*, USNM 758554 (8.1 mm); F, G, *P. burlesoni*, USNM 758816 (8.4 mm); H, I, *P. sterna*, USNM 758821 (11.75 mm).

lucent, glossy; outer lip of peristome bearing upper and lower flanges, each of which is confluent towards center of lip with a higher tubercle; upper flange beginning 2 mm behind upper lip terminus, occupying most of upper half of lip, greatly bowed posteriorly and showing some weak transverse corrugations in middle part, tubercle at lower end of upper flange rising 0.25 mm above remainder of flange and separated by U-shaped concavity, 0.4 mm wide, from tubercle at upper end of lower flange; lower flange plus its tubercle 2.1 mm long, extending to lower lip terminus; all these lip teeth bearing thick-set microdenticles, these producing a serrate margin on thin upper flange but forming a dense cover on outer surfaces of the 2 tubercles and thicker lower flange; shell with numerous minute pitlike scars of former cuticular hairs, a few hairs still persisting on body whorl behind lip and on flared outer surface of lip itself, numerous hairs persisting on walls of umbilicus; first half of nuclear whorl smooth, thereafter occur growth lines that become gradually stronger on dorsal surface and grade to small ribs immediately behind aperture; lower surface smoother with low growth lines; shell color light tan, teeth white.

Paratype.—There are only 2 specimens in the type-series. The paratype is slightly bleached, 8.3 mm in diameter and 3.9 mm high; umbilicus 1.5 mm wide; lower flange of outer lip 2.1 mm long; teeth and other features essentially as described for holotype.

Disposition of types.—Holotype, USNM 758554; paratype, USNM 758815.

Polygyra burlsoni, new species
Plate I, Figs. F, G; Fig. 1, C, D

Description of shell of holotype.—Shell small for genus, 8.4 mm in diameter and 4.0 mm high, depressed, with spire low, forming angle of 155° , rounded peripherally; umbilicus 1.65 mm wide, slightly overlapped by lower lip, contained 5.09 times in shell diameter; aperture obliquely oriented at angle of 40° to vertical; margin of upper lip descending for half the height of body whorl, lip slightly flared outward, distance between upper and lower termini of lip 2.8 mm; upper lip connecting to upper end of V-shaped parietal tooth, this tooth terminating 0.8 mm dorsoposteriorly from terminus of lower lip, tooth forming erect wall throughout, except where descending gradually at lower end; parietal callus thin, translucent; lip of peristome complexly denticulate with the following denticles, from top to bottom: (1) upper half of lip occupied by a series of 6 minutely serrate (on edge) plications oriented transversely to lip, originating near outer margin of lip and extending onto inner surface of lip in cavity of body whorl, (2) at mid-point of outer lip is a wide, blunt tubercle, separated by a U-shaped excavation from (3) a long flange, highest at its upper end and descending gradually to lower terminus of lip; number of whorls 5.1; nuclear whorl

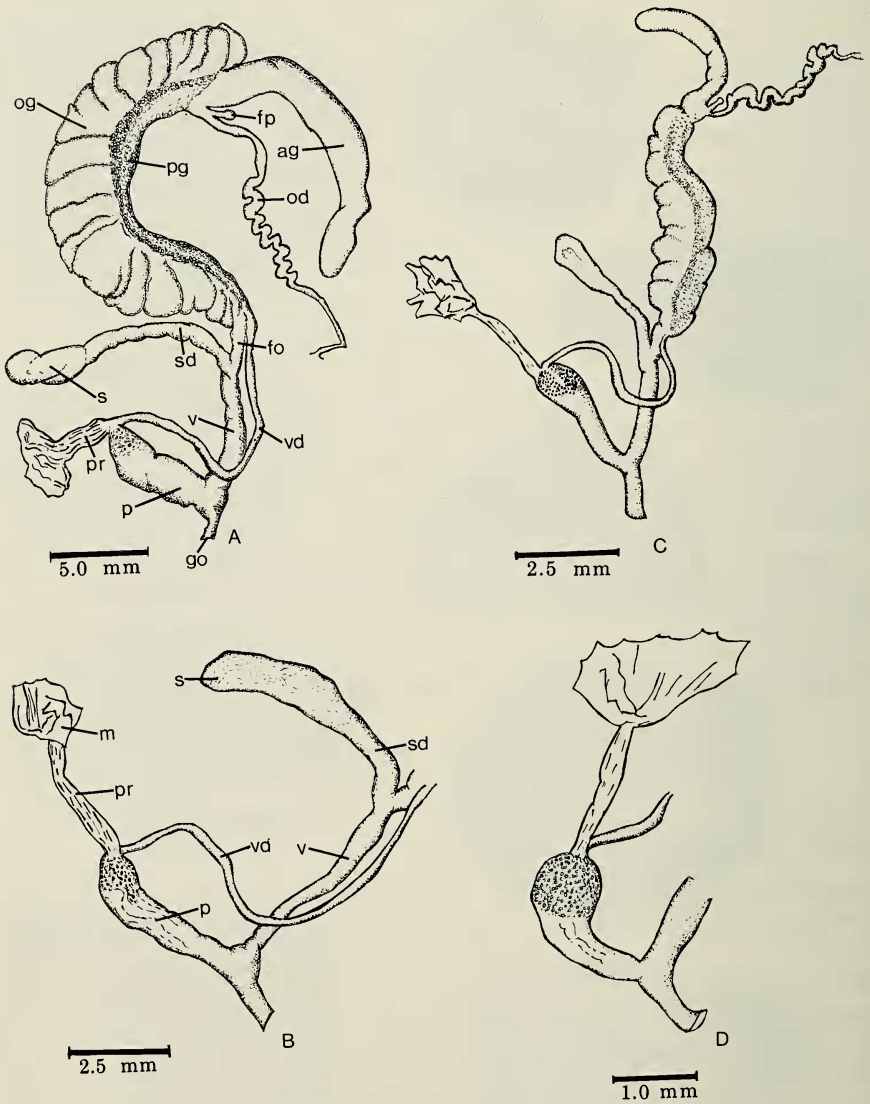


Fig. 1. A and B, Genitalia of *Polygyra multiplicata*; C and D, Genitalia of *Polygyra burlesoni*. ag = albumen gland; fo = free oviduct; fp = fertilization pouch; go = genital orifice; m = mantle; od = ovotestis or hermaphroditic duct; og = oviducal gland; p = penis; pg = prostate gland; pr = penial retractor muscle; s = spermatheca; sd = spermathecal duct; v = vagina; vd = vas deferens.

smooth except for some weak growth lines along suture on last $\frac{1}{4}$ of whorl; growth lines gradually becoming more prominent on succeeding whorls and riblike on upper surface of last $\frac{3}{4}$ of body whorl (lower surface of body whorl smoother); numerous minute pits on shell surface indicate former presence of cuticular hairs, with some hairs still persisting on walls of umbilicus; shell color brown except for denticles and flared lip, which are white to orangish-white; shell glossy.

Coloration of live animal.—Upper tentacles black, as is background color of upper half of body anterior to shell; however, extending from base of upper tentacles over the upper half of the body are yellowish-white reticulations; color of face below upper tentacles and of lower tentacles light tan, this color extending posteriorly onto lower half of sides, top of foot and tail (behind shell) but with small, darker brown maculations in these areas; sole light gray.

Genitalia.—Genitalia of 2 specimens are depicted in Fig. 1: C, D. Penis is elongate with upper part enlarged and having walls with granular appearance. A long, slender retractor muscle and a short vas deferens both attach at terminal end of penis. Vagina is long, giving rise at its upper end to a spermathecal duct with moderately large spermatheca. Talon is minute.

Variation in shells of paratypes.—The number of transverse plications in the upper lip varies from 5 to 8 in 33 paratypes observed from Localities 1 and 2 (described hereafter) with a mean of 6.3. Variation observed for some other shell characters from the 2 localities is indicated in Table 1; shells from the two localities prove to be similar. On some specimens cuticular hairs are much more widespread on the body whorl than is the case with the holotype.

Disposition of types.—Holotype, USNM 758816. Paratypes: DMNH 5361; UA 6260; USNM 758817; UTEP 5209, 5216, 5751, 5901.

Polygyra multiplicata, new species

Plate I, Figs. A–C; Fig. 1, A, B

Description of shell of holotype.—Shell moderately thick, 12.8 mm in diameter and 5.2 mm high, moderately depressed with spire forming angle of 157° , rounded peripherally; umbilicus 2.6 mm wide, contained 4.9 times in shell diameter; aperture oriented obliquely to vertical; upper lip margin descending greatly, for 90% of height of body whorl so that upper lip terminates only slightly above lower, the 2 termini 2.7 mm apart, obliquely; peristome flared outward and twisted; thin lamellar callus on parietal wall bearing a U-shaped denticle, upper ramus of "U" terminating 0.5 mm behind terminus of upper lip while lower ramus terminates 1.1 mm dorsoposteriorly from terminus of lower lip; rami arising abruptly from these termini and forming a wall 0.7–0.9 mm high throughout their extent; short, tail-like spur

Table 1. Some measurements and proportions for shells of paratypes of three new species of *Polygyra*. Upper numerals indicate extremes, lower numerals mean and standard deviation (the latter in parentheses). Localities noted are explained in text.

| | <i>P. multi- plicata</i> Locality 1 | <i>P. multi- plicata</i> Locality 3 | <i>P. burle- soni</i> Locality 1 | <i>P. burle- soni</i> Locality 2 | <i>P. sterna</i> |
|--------------------------------------|--|--|---|---|---------------------------|
| No. of specimens | 12 | 20 | 17 | 15 | 9 |
| Diameter | 13.1-14.2 13.70(.300) | 11.45-13.1 12.49(.421) | 7.3-8.1 7.76(.248) | 7.35-8.45 7.68(.350) | 10.9-11.95 11.31(.467) |
| Height | 4.85-5.9 5.41(.318) | 4.7-5.75 5.11(.271) | 3.6-4.7 3.90(.258) | 3.5-4.0 3.74(.173) | 4.35-4.75 4.54(.133) |
| No. of whorls | 5.25-5.4 5.30(.054) | 4.75-5.4 5.08(.186) | 4.8-5.3 5.08(.118) | 4.7-5.6 5.04(.257) | 4.6-5.0 4.74(.133) |
| Apertural height | 2.8-3.4 3.10(.186) | 2.9-3.8 3.27(.270) | 2.4-3.2 2.77(.190) | 2.6-3.0 2.84(.135) | 2.6-3.3 3.03(.240) |
| Apertural width | 5.6-6.5 5.93(.293) | 5.8-7.0 6.42(.380) | 2.9-3.8 3.45(.181) | 3.2-3.8 3.48(.207) | 4.8-5.7 5.32(.349) |
| Umbilical width | 2.3-3.1 2.54(.231) | 2.5-3.5 2.97(.237) | 1.3-1.7 1.49(.104) | 1.4-1.9 1.54(.149) | 1.7-2.2 2.07(.144) |
| Diameter/height | 2.33-2.81 2.54(.130) | 2.09-2.62 2.45(.135) | 1.68-2.11 2.00(.102) | 1.82-2.17 1.99(.103) | 2.37-2.64 2.49(.093) |
| Diameter/umbilical width | 5.07-6.00 5.51(.300) | 3.71-4.89 4.23(.315) | 4.41-6.08 5.22(.400) | 4.40-6.25 5.20(.503) | 5.12-6.44 5.48(.412) |
| Apertural width/ apertural height | 1.73-2.07 1.92(.110) | 1.71-2.34 1.98(.186) | 1.13-1.38 1.25(.058) | 1.00-1.24 1.16(.071) | 1.63-2.04 1.76(.144) |

descending from posterior, rounded end of "U"; lip of peristome bearing series of 13 plications, in 5 series, as follows: (1) uppermost plication beginning 1.5 mm from upper lip terminus and slightly internal to peristomial margin, minutely but distinctly serrate on edge, extending back for 3.4 mm on inner surface of outer lip; (2) beginning 1.4 mm from the first-mentioned fold are a series of 8 plications, which are similar to each other in morphology, all minutely serrate on their edges, the upper and central folds descending obliquely back along inner surface of lip; the longer ones extending for a distance of 2.2 mm, lower folds becoming progressively smaller and grading in size to the following; (3) two small, serrate plications, which barely rise above the subtending peristomial callus and do not extend back along inner surface of lip (4) the above 2 minute folds are followed by a slightly larger one, extending back 0.8 mm on inner surface of lip; (5) a final and lowermost fold rises slightly above the peristomial callus 2.7 mm from lower terminus of outer lip and then descends gradually, ventrally, to merge with callus; number of whorls, 5.25; first (nuclear) whorl smooth; dorsal surfaces of other whorls with low, closely crowded growth lines, these becoming progressively more prominent on dorsal and lateral surfaces of body whorl (but not on its ventral surface) and becoming almost riblike

immediately behind flared peristome; shell color grayish-tan except for white parietal denticles and inner and outer surface of lip peristome and its plications.

Coloration of live animal.—Tentacles gray with numerous minute black, raised maculations arranged in irregular rows; dorsal background color gray but with large black maculations arranged in well defined rows anterior to aperture, these becoming lighter in color and more scattered on sides, on which color grades to uniform gray ventrally; sole with dark gray border, lighter gray in center.

Genitalia.—Genitalia of 2 specimens are shown in Fig. 1: A, B. Penis is moderately long and of generally uniform diameter, making juncture, at its terminus, with a long penial retractor and short vas deferens. The vagina is long and gives rise to a thick spermathecal duct at its upper end, which, in turn, bears a large, club-shaped spermatheca. The talon is relatively small.

Variation in shells of paratypes.—Number of apertural plications varied from 11 to 17 in 12 paratypes from Locality 1, with a mean number of 13.9 and from 10 to 14 in paratypes from Locality 2 with a mean of 11.55. Variation for some other shell measurements and proportions are shown in Table 1. It will be noted that shells from the lower elevation (1,220 m) and more xeric habitat of Locality 3 are smaller than those from the higher elevations (1,600–1,830 m) of Locality 1, with almost no overlap in shell diameter between the two. However, apertural and umbilical dimensions average larger in the shells from the lower locality. Thus, the combinations (1) large shell-small aperture and (2) small shell-large aperture are distinctively different.

Disposition of types.—Holotype, USNM 758818. Paratypes: DMNH 5363; UA 6259; USNM 758819; UTEP 4939, 5208, 5219, 5680, 5688, 5919.

Hybrids.—Two shells found in upper Cañon el Bonito (Locality 1) seem to be hybrids between *P. burlesoni* and *P. multiplicata*. They are intermediate in size between the two species (10.1 and 10.4 mm in diameter and 4.9 and 5.0 mm in height). The upper lip descends almost to bottom of the body whorl as in *P. multiplicata*. In denticulation they are closer to *P. burlesoni*. As in *P. burlesoni*, only the upper half of the lip bears transverse plications while the lower part bears a long flange. However, in the position of the centrally located, small tubercle of *P. burlesoni* is a structure that appears to have formed from fusion of two or three plications like those above. This structure is not found in either of the postulated parent species.

Polygyra sterni, new species

Plate I, Figs. H, I

Description of shell of holotype.—Shell thick, 11.75 mm in diameter, 4.74 mm high, depressed, with spire forming angle of 147° , rounded peripherally; umbilicus 2.4 mm wide, contained 4.9 times in shell diameter;

aperture oriented obliquely to vertical; upper lip margin descending to half height of subtending body whorl, upper lip terminus 3.0 mm, obliquely, from lower lip terminus; parietal wall covered with well developed lamellar callus, raised dorsoanteriorly from underlying whorl, bearing large denticle, irregularly U-shaped, and with sinuous, erect walls, ca. 1 mm high, walls 0.9 mm apart at anterior margin of parietal callus, distance from this margin to posterior end of denticle 3.9 mm.

Outer lip peristome wide, flared outward, bearing a complex array of plications and denticles, described, clockwise, from upper lip terminus as follows: (1) a series of plications occupies upper half of lip (a) the first of these near the upper lip terminus, originating on outer part of peristome and extending back for 2.5 mm on inner surface of lip, (b) a small tubercle occurs, immediately adjacent to the preceding plication, on middle part of peristome, (c) at a distance of 0.5 mm beyond the tubercle begins a series of 7 folds, the highest being smallest and the lower 3 largest; uppermost, smaller folds restricted to middle part of flared peristome, lower, larger ones originating at outer margin of peristome and extending completely across it; edges of inner half of folds minutely serrate; (2) lower half of peristome with one large denticle produced by outer margin of peristome and 2 by its inner part, these inner and outer teeth separated by ca. 1 mm distance on peristome; outer tooth beginning at center of outer lip margin as an erect flange perpendicular to the peristomial wall, highest at upper end (0.9 mm) and gradually descending to merge with peristome at distance of 3 mm (2 minute spurs descend from upper end of this tooth onto surface of peristome); upper inner tooth 1.5 mm long, confluent with inner part of lowermost of the 7 folds noted above, separated by an indentation of 0.5 mm from lower, inner tooth; lower inner tooth elongate, 3.4 mm long, highest at upper end and descending gradually to near lower lip terminus; 3 low folds pass across peristomial wall from outer tooth, one to the upper inner tooth and two to the area of indentation between the upper and lower inner teeth.

Number of whorls 4.75; nuclear 1.5 whorls with very weak growth wrinkles, these grading to more prominent growth lines on succeeding 2 whorls, with growth lines becoming riblike on last 1.5 whorls dorsally and on sides but only on last 0.75 whorl on ventral surface, these ventral ribs extending to umbilicus; shell color light tan with peristome and associated denticles of a slightly lighter shade of the same color (because shell was dead when collected there may have been some bleaching from original color).

Variation in shells of paratypes.—In *Polygyra sterna* there is considerable variation in the elaborate denticulation, even within the 10 specimens observed. In some specimens the parietal denticle complex is not walled

anteriorly. In others a wall forms anteriorly and the complex takes on the aspect of an elongate basin with walls encircling a central depression. The number of folds in the upper lip varies from 5 to 8 with a mean of 7.1. The structure termed an "upper inner tooth" in the holotype is especially variable, ranging from 0.6 to 2.3 mm in length. In some specimens it seems to be only an enlarged lowermost fold, like those above it, whereas in others, it appears to consist of several fused folds. It is not clear whether it represents, evolutionarily, a tooth that is fragmenting into folds or a tooth that is being formed by the fusion of several folds. The outer tooth varies considerably in development, ranging from 2.4 to 2.9 mm in length (mean, 2.42) and 0.7 to 1.3 mm in height (mean, 0.89). Variation in some other shell measurements and proportions is indicated in Table 1.

Disposition of types.—Holotype, USNM 758821. Paratypes: DMNH 5362; UA 6261; USNM 758822; UTEP 4936.

Etymologies

Dr. Paul Bartsch, associated with the National Museum of Natural History from 1895 to 1946, commenced preparation of a work concerning the Mexican Polygyras. He left notes and labels in the Museum indicating names that he proposed. *Polygyra dalli* was one of these names, which, we assume, honored William H. Dall, eminent malacologist, who lived from 1845 to 1927.

Polygyra burlesoni and *P. sterni* are named in recognition of Mr. Robert Burleson, Temple, Texas, and Dr. Edward Stern, University of Wisconsin at Stevens Point, who generously provided transportation, companionship and much assistance on the field excursions on which the respective species were collected.

The name *multiplicata* (L., *multus* + *plicatus*) refers to the numerous plications or folds found in the outer lip of that species.

Differential Diagnoses

Genitalia are known only for *P. burlesoni* and *P. multiplicata*. In addition to overall smaller size of the genitalia of *P. burlesoni*, the penis in specimens dissected was relatively more expanded in its upper part. Genitalia for most species of *Polygyra* from México have not been figured. The genitalia of the species discussed here are similar to those of *P. texasiana* (Moricand, 1833) as figured in Pilsbry (1940:Fig. 392A).

The background color of the upper tentacles and adjoining dorsum is gray with blackish maculations in *P. multiplicata*, whereas in *P. burlesoni*, the background color of these areas is black with a distinctive network of yellowish-white reticulations.

The parietal denticle differs in the 4 species. It is most complex in *P. dalli*, comprising a high-walled, straight upper section, confluent with the upper lip, and a narrowly U-shaped lower part almost reaching the lower lip. *P. burlesoni* bears a simple V-shaped tooth, confluent dorsally with the upper lip. The U-shaped parietal tooth of *P. multiplicata* does not reach the upper lip and the tooth of *P. sterni* is restricted to the central part of the parietal wall, where, in gerontic specimens, it is walled on all sides (open anteriorly in younger specimens).

Transverse plications occur in the outer lip of 3 of the species described and differentiate them from shells of other known Polygyras. These plications extend along almost the full extent of the lip in *P. multiplicata* but are restricted to its upper half in *P. sterni* and *P. burlesoni*. In *P. dalli* a flange in the upper part of the outer lip displays weak corrugations, which are probably homologous to the plications of the other species. The lower half of the outer lip is occupied by a simple elongate flange in *P. dalli* and *P. burlesoni*. In *P. sterni* both inner and outer flanges occur in the lower part of the lip.

Tiny toothlike projections (termed microdenticles) are numerous on the teeth of *P. dalli*. Cuticular hairs and their scars occur in *P. dalli* and *P. burlesoni*. Ribs are well developed on the entire body whorl, dorsally, in *P. sterni* but occur only on the youngest part of the whorl in the other species.

Habitats and Localities of Collections

Polygyra dalli.—*Polygyra dalli* was collected on the expeditions of Edward W. Nelson and Edward A. Goldman in México. Data with specimens state: "9,500 ft. Sierra Guadalupe, Coahuila, Mex. May 1, 1902. Nelson & Goldman." The Sierra de Guadalupe is described by Goldman (1951:133–135) as being situated ca. 20 miles southwest of Saltillo, Coahuila, and being "mainly limestone." Nelson and Goldman visited the eastern part of the range, sometimes indicated as the Sierra de la Concordia, from 20 April to 3 May 1902 and ascended to a height of "9,500 ft." Recent maps indicate that the eastern segment of the range reaches a height of 11,286 ft (3,440 m). In regard to specimens taken on this excursion, Goldman noted (p. 133) "Specimens were all labeled 'Sierra Guadalupe.'" Thus, it is impossible to ascertain exactly where the type-locality of *P. dalli* may be within the range. This range complex was visited by H. A. Pilsbry on 14–17 July 1934 and discussed by him (Pilsbry, 1953:136). He found no *Polygyra* on this excursion to the range, which suggests that the genus may be relatively rare there.

Polygyra burlesoni and *P. multiplicata*.—The Serranías del Burro are mountains located ca. 120 km WSW of Del Rio, Texas, and Ciudad Acuña, Coahuila, and are visible, in the distance, from these cities. The uplift is

roughly quadrate in shape and occupies some 700 km². Highest peaks of the range reach 2,105–2,125 m (6,906–6,975 ft). Smith (1970:8–10; Pl. 1) indicated that the range is predominantly of Cretaceous limestone bedrock and described it as a “long, low upwarp” within which considerable folding, faulting and topographic dissection have taken place. We visited only one major, northeast-draining canyon of the range, Cañon de la Zorra, and collected in tributary canyons of its extreme upper, western end: Cañon el Toro and Cañon el Bonito, located on Rancho el Bonito, Mco. de Villa Acuña, in February and September, 1977. *Polygyra burlesoni* and *P. multiplicata* were taken in both canyons. *Polygyra burlesoni* was found only along the floors of these canyons where there are well developed, dense stands of deciduous and evergreen trees and shrubs. These include *Juniperus* aff. *virginiana* L., *Ostrya* sp., *Quercus* spp., *Crataegus* sp., *Prunus serotina* Ehrh., *Cercis canadensis* var. *mexicana* (Rose), *Acer grandidentatum* Nutt., *Rhamnus* sp., *Tilia* sp., *Arbutus xalapensis* H.B.K. and *Viburnum* sp. *Polygyra multiplicata* occurred in more xeric habitats in the lower, more open parts of canyons, on alluvial terraces along canyons, on hillsides and on hillcrests. In these more open woodlands occur such shrubs and trees as *Pinus arizonica* Engelm., *Juniperus flaccida* Schlecht, *Dasylirois* sp., *Agave* sp., *Philadelphus* sp., *Fendlera linearis* Rehd., *Cercocarpus* spp., *Ceanothus* sp., *Garrya ovata* Benth. and *Salvia regla* Cav.

At one place, intermediate in habitat, in both Cañon el Bonito and in Cañon el Toro, *P. burlesoni* and *P. multiplicata* were taken together and in Cañon el Bonito 2 probable hybrid specimens were found (discussed under account of *P. multiplicata*, above). Three localities in the above canyons at which specimens were collected are:

Locality 1: 29°01'20" to 02'00"N; 102°05'55" to 07'00"W. Uppermost end of Cañon el Bonito from near a concrete watering tank for livestock (*pila*) to head of canyon, 1,600–1,830 m elevation. Type-localities of both *P. burlesoni* and *P. multiplicata* are in this canyon with that of *P. burlesoni* at ca. 1,600 m elevation and that of *P. multiplicata* at ca. 1,675 m.

Locality 2: 29°03'15"N; 102°04'00"W. Upper end of Cañon el Toro, elevations approximately as at Locality 1. Both species taken.

Locality 3: 29°01'30"N; 101°58'00"W. At entrance gate to Rancho el Bonito in degraded grassland with *Mimosa-Yucca-Prosopis* desert scrub. Here only *P. multiplicata* was taken, under rotting pine saw-logs (1,230 m).

Polygyra sterni.—This species was collected on the lower, north slope of the extreme north end of the Sierra San Vicente, Mco. de Sacramento, immediately south of México Federal Highway 30 and 2.25 km east of Boquillas (village on highway, between Nadadores and Cuatro Ciénegas de Carranza), 27°00'00"N; 101°52'20"W, at 750 m elevation on 20 May 1976. Shells were collected from limestone talus (visible from highway) on a

sparsely vegetated (mainly xeric shrubs) slope. It occurred with specimens of two species of *Rabdotus*. No live specimens of any of these snails were taken.

Discussion

It seems likely that the four species described here form part of a related group of *Polygyras* inhabiting the mountains of Coahuila. Shells of *Polygyra idiogenes* Pilsbry, 1956, indicate that it also appertains to this group. The type-locality of *P. idiogenes* (San Lorenzo Cañon in the Sierra Zapaliname, 25°18'30"N; 100°57'00"W) is not far (ca. 50 km ENE) from that of *P. dalli*, although they are in separate ranges. Further collecting in the area may reveal intermediate forms between *P. idiogenes* and *P. dalli* and demonstrate them to be conspecific. They seem to be the most plesiomorphic of the 5 species discussed. No transverse plications are found in shells of *P. idiogenes* and *P. dalli* but, in *P. dalli*, weak corrugations in the upper flange of the outer lip suggest such plications and may be their progenitor. Microdenticles cover all teeth in *P. dalli*, producing minute serrations on edges of the thinner teeth. Similar, but somewhat coarser, serrations are seen on edges of plications in the remaining species.

Polygyra burlesoni is small, like the 2 species discussed above, and shares some of their plesiomorphic characters. However, it has evolved to a stage where the corrugations, barely discernible in *P. dalli*, have now become separate plications occupying the upper half of the outer lip.

In *P. sterna* the upper part of the outer lip bears, as in *P. burlesoni*, a series of transverse, serrate plications. However, denticles of the lower half of the outer lip seem to be highly apomorphic, especially as regards occurrence of a separate, outer flange paralleling the inner one. *Polygyra multiplicata* also seems to be apomorphic but has taken a different tack, evolutionarily, from *P. sterna* in that the outer lip is occupied exclusively by transverse, serrate plications.

Despite the unusual denticulation of the more apomorphic members of the group it seems clear that they are derived from a *Polygyra* of the *idiogenes* kind of morphology and that all should be placed in the subgenus *Erymodon* Pilsbry, 1956:20.

It is highly likely that additional members of this group will be found in the mountains of Coahuila, probably allowing a better appraisal of evolutionary trends.

The plications of the outer lip that are characteristic of most of the species described seem not to have been reported in *Polygyra* previously. They bear superficial resemblance to plications illustrated for some species of Fijian endodontid land snails treated by Solem (1973:Figs. 16, 18).

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